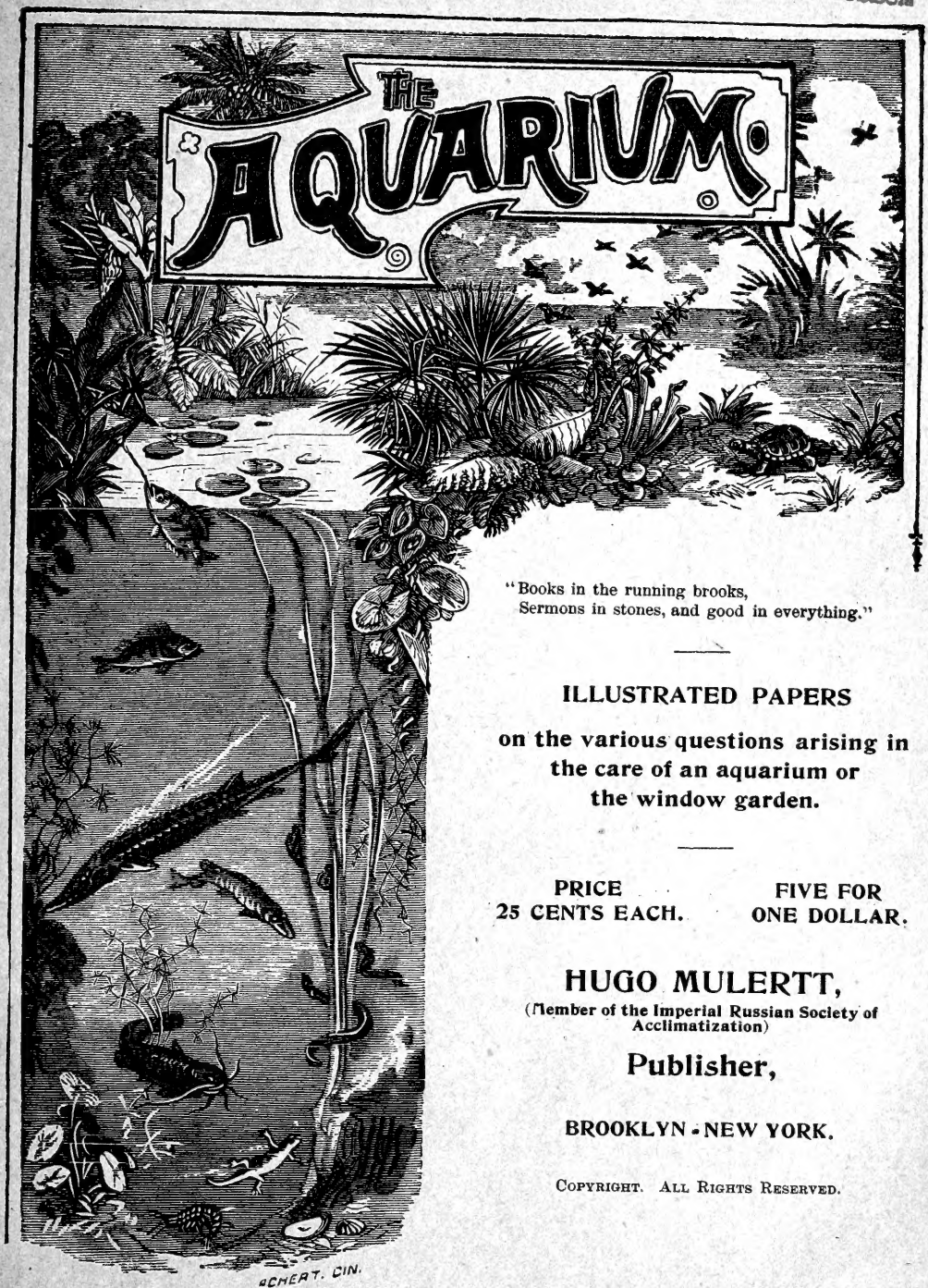

"Books in the running brooks,
Sermons in stones, and good in everything."

ILLUSTRATED PAPERS

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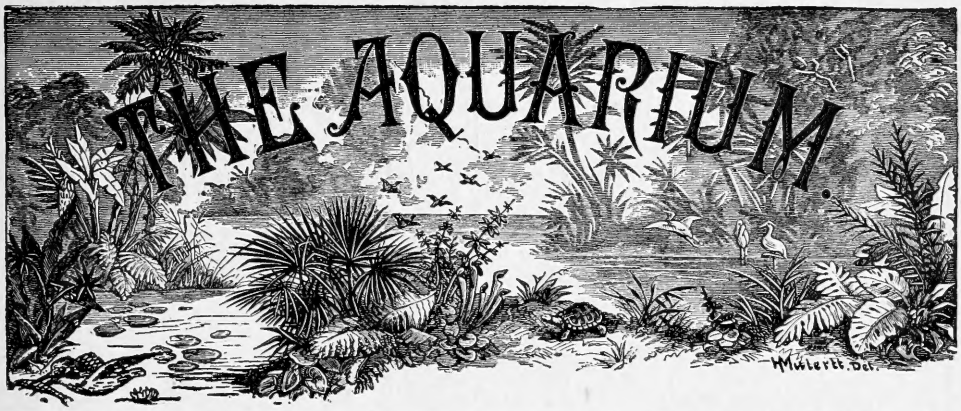


VOL. IV. OCTOBER, 1896. No. 41.

IN AND OUTLETS FOR FISH TANKS.

Quite recently there has been a great deal of attention paid, in piscatorial circles, here and abroad, to the draining of fish-tanks. The question is: Is surface or bottom drainage preferable? We had the impression that this question had been settled years ago, but it seems that every now and then mechanics, insufficiently posted on the requirements of aquatic animals, are entrusted with the construction of a plant intended for storage or exhibition of live fish or other aquatic animals, and this seems to be the cause that this question has not yet come to rest.

This is really surprising, in view of the fact, that gardeners, professional or private, have, for about a quarter of a century, ceased to give a contract for the construction of a greenhouse or conservatory to any other builder than one who makes *greenhouse construction* his specialty. The advantages of such a proceeding are manifold, and they are plausible, for his experience has taught him what material and what style of construction is best for a certain purpose in a certain climate or locality.

The conservatories of former days were built by first-class carpenters, of the very best materials and were very good for an architectural effect, but as *conservatories* they proved, generally, a failure, because the requirements of plant life had not been taken in consideration.

The construction of fish-tanks for storage, market or show purposes is no less important a matter than the construction of a greenhouse. Here, too, entirely too much importance is placed upon exterior appearance of the tanks, which are, as a rule, of a highly ornamental pattern, of carved marble or costly casting; they are as decorative pieces, quite a success. But as a rule they are not practical, and soon become a burden to the proprietor.

Fish that are brought to stores, stalls in the market or show tanks at an exposition, were generally freshly caught, either from their native haunts or from the pond in which they were reared. Their stomachs and entrails are generally filled with food. If such fish are carefully handled, their digestion is not much disturbed, and we have only their excrements and the surplus of slime of their bodies to combat

against, but even this, when the number is large and the tanks small, will rapidly poison the water. But when the fish were carelessly handled, are frightened, or willfully injured, as is often the case, then we have, in addition to the natural deposits, partly digested food, disgorged by the fish while frightened, knocked off scales and pieces of skin in the water. All of this matter is being continually stirred up by the motions of the fish and thus mixed with the water, making the latter, as it decomposes, more detrimental to them every minute.

It is but natural that the most desirable specimens, being used to the very purest of water, are the first to succumb, soon to be followed by others. At best, all the fish become diseased, either externally or internally, and finally die too.

To overcome this, fish tanks are supplied with a constant stream of fresh water entering on one end, passing through the middle and leaving the tank again on the opposite side. To the casual observer this seems perfectly sufficient, as it creates a current just as we see it in a creek. But we must consider that we have a great many more fish over a given space of bottom than are found in any creek or pond continually; the foul air produced at the bottom of a fish-tank is, therefore, altogether out of proportion to that of a creek, and our aim must, therefore, not only be to supply fresh water to the tank, but also to remove the decomposing sediment from the bottom as soon as it appears.

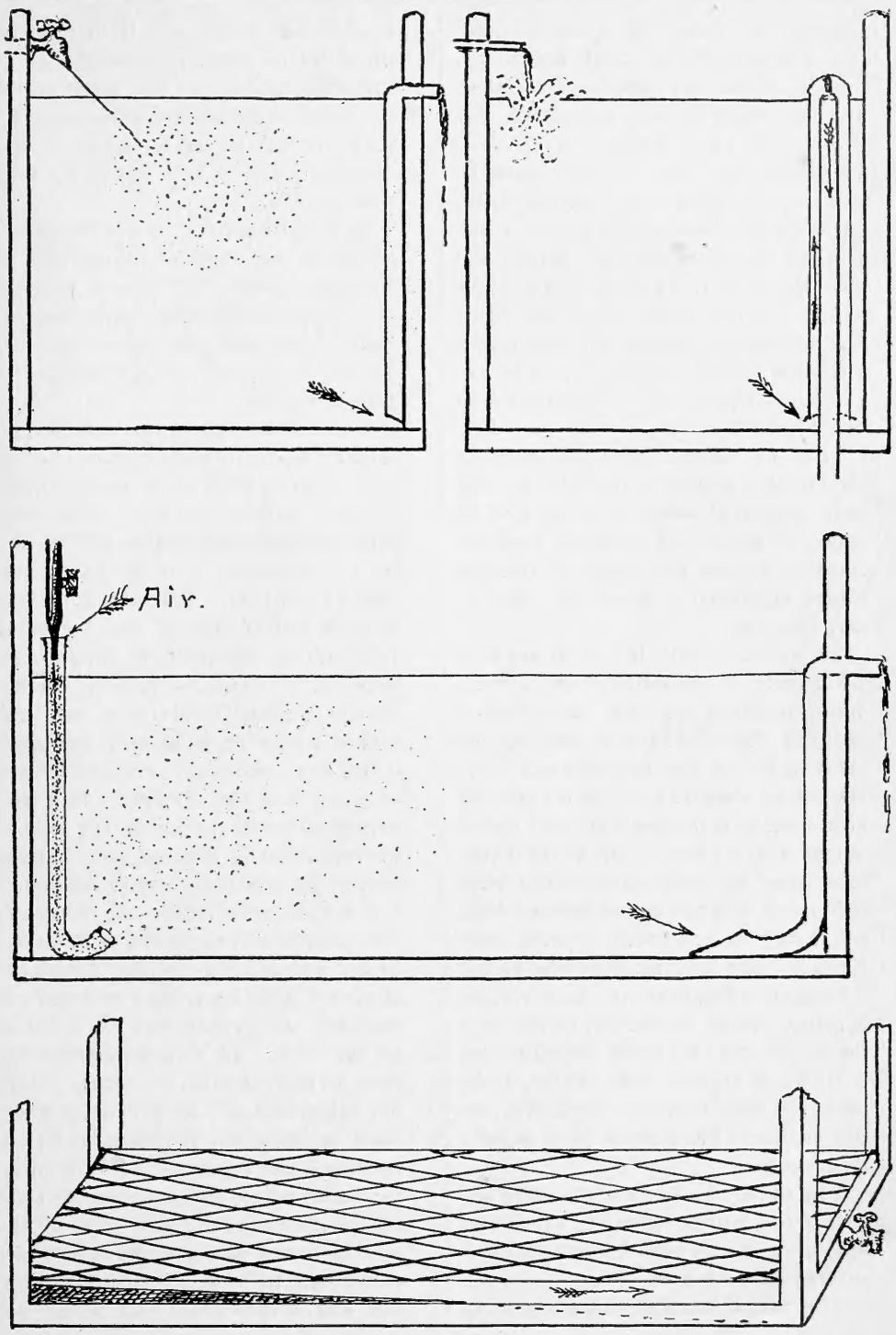
The annexed sketches will show the reader the various styles of in and outlets, all of which have been in use with success by the writer.

The tank illustrated on the upper left hand corner of the plate, illustrates the principle of forcing atmospheric air into the water. As the water enters the tank with great force through a very fine jet, it carries some air deep into the water, thus charging the same with oxygen.

The foul water and the sediment collected at the bottom are carried off through a drain, best located in a corner *inside* of the tank; this takes the water from near the bottom and discharges it, at water level, through the side of the tank.

In localities where the water supply is limited, the manner shown in the next tank to the right is convenient. The foul matter is carried off at water level through the bottom of the tank by a standpipe. It is also taken from near the bottom. This standpipe system has the advantage that the water-level can be regulated by it, all being required is to slide the pipe up or down. A cap, in shape similar to a test tube, and of proper proportions to guarantee a free flow, reaching to within a quarter of an inch of the bottom, is supported over it either at the top of the pipe, as shown in the illustration, or at the bottom by putting little feet to the cap.

For the introduction of oxygen in the manner shown in the next tank, a pretty strong force of water is required. A strong glass tube, bent to a hook at its lower end, is stationed in a corner of the tank. In this tube a thin but very strong stream of water enters, the upper end of the tube being about three inches above the water level. The nozzle of the supply pipe is only about one inch above the surface and inside of the glass tube. The suction of this stream draws air into the tube which mixes with the water, is carried down to the end of the tube, and enters the



In and Outlets for Fish Tanks.

tank at the bottom. The drain is similar to that mentioned already above.

As is shown by these examples, the current caused by the entry of fresh water is used : (1) to supply oxygen for the fish, and (2) to remove the foul gases and injurious sediments.

A drain similar to the one shown in this tank is used in carp ponds located in cold localities. The master fisher on the estate of the late Eckardt, Esq., of Lübbinchen (Germany) first constructed a pond outlet after this principle, his object being to carry off the cold and foul water of the bottoms of his carp ponds, retaining the warmer and purer water of the surface. In connection with a model showing the construction and working of a carp pond that we had on exhibition at the Cincinnati Industrial Exposition in 1882, we showed this drain.

The lower illustration shows the bottom section of an ordinary aquarium tank. In localities where it is impracticable to use water from the city water works, it being too muddy, or where water is scarce, we found it beneficial to the health of the fish to have a false bottom about an inch above the real one. The real bottom should slightly decline towards the faucet. The false bottom may be constructed of wire netting as indicated in the drawing, or it may consist of a strong pane of glass, the latter cut to fit loosely all round. The sediment will be worked through the slits around the sides thus left and the water kept free from impurities of a visible form at least.

When selecting glass for this purpose, let it be either white (so-called milk-glass) or dark-blue in color, as these colors show fish to advantage.

From time to time the sediment is removed through the faucet, and fresh water added by pouring it in with a pail or watering pot.

ANCIENT FISH CULTURE.

From an interesting article in *The Fishing Gazette*, on the "Fisheries of the Greeks and Romans," being a reprint from the *Bulletin* of the United States Fish Commission, we clip the following :

THE MURAENA.

The muraena is described in the following manner by Paul Jovius, whose words are given in a literal translation to show at the same time how natural history was written in the sixteenth century :

"Muraenas are found in great numbers in all parts of the sea, but those from the coasts of Sicily are the largest and best. These are the kind which Columella calls 'flutes.' They swim near the surface, and it therefore sometimes happens that when the warm rays of the sun dry their skin, thereby depriving them of their flexibility, they can no longer dip beneath the water and can easily be caught with the hand. They are speckled, and are said to have star-like figures on their sides, arranged in the shape of dippers, which, however, disappear immediately after death. They possess great cunning, for when they find themselves caught they swallow the hook, bite through the line with their teeth, and thus make their escape. I am of opinion that the ancient Romans prized the muraena more on account of its long life than of its delicious flavor, for the large number required for daily use could easily be kept in ponds prepared for the purpose, while most other fish soon died, either through grief at having

lost their liberty or through neglect of the pond keepers. We know from Pliny that C. Hirrens at a banquet given to Cæsar as Dictator could place on the table 6,000 muraenas from his own ponds. Muraenas could easily be tamed and taught to take food out of a person's hand. Croesus, surnamed The Wealthy, was so much attached to a muraena, which he had raised himself, that when it died he shed tears and had it buried. We also read an account of an answer which Croesus gave to L. Domitius, who laughingly expressed his astonishment that any one would weep over a dead muraena. It might perhaps be thought strange, he said, that he, Croesus, shed tears over a dead muraena, but it was far more strange that he, Domitius, did not shed any tears over his three dead wives. (Domitius had three wives, whom he is reported to have poisoned in order to obtain their property.)

Certain ladies showed great affection for muraenas. Thus Antonia, the daughter of Drusus, adorned a tame muraena with gold rings and bracelets.

Muraenas eat human flesh, and the cruelty of Vedius Pollis in this respect seems well established. He placed those of his slaves who had been condemned to death in his fish pond in such a manner that they could not be eaten at once, but were gradually torn to pieces by the teeth of the muraenas. It is said that the muraenas breathes through its tail, and therefore dies sooner when struck on the tail than when struck on the head.

D. Ambrosius and several other ancient writers assert that snakes mate with muraenas, and that the latter entice the snakes to the seaside by a certain peculiar whistling sound. Athenaeus does not believe this, and in corroboration of his opinion quotes from a work on popular superstitions, written by Andreas. Muraenas spawn all the year around, and of this kind the murus, the largest and strongest, is of a uniform color very much resembling that of the larch; so at least Aristotle affirms. Pliny calls this kind myrinus. There is also a river muraena, which is much smaller and has only one point; and which, according to Dorianus, is the same that Athenaeus calls gollaria, and I think that Athenaeus must have meant by this smaller kind what we call lamprey, and not the sea fish. Iresius assures us that the flesh of the muraena is not less nourishing than that of the eel, but on account of a certain hardness and moisture it is very indigestible. It is, however, much prized on account of its delicious entrails, with which, as Lampridius tells us in his history, Heliogabalus, while far from the sea, regaled his court and the whole rural population."

PEARL CULTURE.

A pearl is the result of an oyster's effort to remove a source of irritation, says the Chicago *Record*. If a grain of sand or some other hard substance finds its way into the shell the oyster begins coating it with nacre, which gives the irritating intruder a smooth exterior. The oyster deposits over the offending object as long as it remains a source of irritation, and the Chinese have taken advantage of this peculiarity of the solitary mollusk. They make little pellets of earth which has been dried and powdered with the juice of camphor seeds, and during May and June plant these in the oyster. The shell is opened with a mother-of pearl knife, care being taken not to injure the oyster,

and the earth pills are laid under the oyster's beard. The treated mollusks are then placed in canals and pools, and left undisturbed until November, when they are dredged up, opened and the nacre-covered pellets removed with sharp knives. The pellets are usually found fastened tightly to the inner surface of the shells.

The Chinese pearl farmer then turns jeweler. He drills a little hole into the pearl at the place where it was fastened to the shell and removes the dirt. The cavity is filled with yellow rosin, and the opening sealed neatly with a tiny bit of mother-of-pearl.

But a Frenchman has improved on this method. He found that the Chinese killed many oysters by forcing the shell open to deposit the earth pellets. The ingenious Frenchman bored holes in the shells of the oysters with a small drill and then introduced through the opening little globules of glass. He plugged the holes with corks and then left the oysters alone to manufacture pearls. In six months the glass nucleus was covered with a pearly deposit, and the Frenchman reaped a bountiful harvest of pearls. He did not have to bore holes in the pearls to remove the centre, and the pearls brought higher prices than the pearls made by the Chinese.

These artificial pearls have much of the lustre and beauty of the real gems, but are sold at a much lower rate by honest jewelers. Experts can color pearls black, pink, gray and other colors by the use of chemicals. For instance, a pearl put in nitrate of silver turns black. But pearl raisers know a trick worth two of that. Certain kinds of fresh water mussels bear pink pearls, and pearl oysters produce different colored pearls, according to the part of the oyster which is irritated by the foreign substance. The artificial pearl producer knows this, and plants his seed accordingly. In Washington is an artificial pink pearl as large as a pigeon's egg, and its heart is a bit of beeswax.

Perfectly round pearls which weigh over twenty-five grains each are scarce, and command large prices, but such pearls are natural. Artificial pearls are usually flat on one side.

PLANTING YOUNG FISH.

Young, artificially hatched fish, intended for stocking *open waters* (creeks, rivers or lakes), should not be fed artificially. They being expected to make their own living, it is best to make them dependent upon their own resources as soon as the desire to feed is noticed and their digestive organs are about developed, which state is easily ascertained by unfailing signs.

In nature young fish begin to look out for themselves at this age, and in tanks they manifest their desire for independence; they become enterprising, especially towards night, and many of them will make their escape through the overflow pipe. We have had frequently opportunities to meet such deserters again later on and noticed, to our surprise, that in every case they had, in a remarkable degree, outgrown all their comrades. Follow Nature! She is a reliable teacher.

Young fish that had been regularly provided with food, artificial or natural, and kept in shelter, have not learned how to hunt and how to protect themselves. They have also lost much of their alertness, and they will consequently fall an easy prey of their many enemies.

It is, therefore, of great importance

that the hatching of the eggs and the development of the young fry should keep pace, as much as possible, with the food supply out of doors. The laws of nature cannot be transgressed without punishment, and the fish culturist who hatches his eggs too soon is in the same position with the gardener who plants too soon.

The best localities where to plant young fish are shallow places in creeks, inlets of lakes, or little runs to which large fish cannot go. If possible, places near a spring should be selected, where an abundance of suitable live food and shelter, in the way of flat, hollow-lying stones, vegetation or brush is to be found. Sometimes it becomes necessary to prepare such sheltered places for their reception, and if this is the case, these should be completed days before, so that everything is in readiness when the fish have arrived at that stage of development where nature directs them to hunt.

It being of great importance that the young fish should find plenty of food and shelter, in order to rapidly outgrow many of their enemies, it would be against their interest were we to plant them all, or too many, in one place, thinking that they will scatter gradually by themselves. Such a proceeding would exhaust the food supply too rapidly. This would retard the growth of the fish, and besides, such a large gathering of young fish would attract their enemies in great numbers. The securest plan is, therefore, to plant them towards evening, in a great many different places, and only in small colonies. Thus, all the advantages for their struggle for existence are in their favor.

Show this copy to some friend.

BOUNTY FOR DESTROYING FISH ENEMIES.—In Utah they give a bounty for fish-eating birds. Three boys recently brought in 1,630 heads of different birds, claiming the bounty. Other States should follow.—*Fishing Gazette.*

This is a movement in the right direction.* In the editor's opinion, there has been entirely too much attention given to the hatching of fish and not enough to their protection. There are exceptional cases where fish are best hatched artificially, but the majority of our food fishes will propagate bountifully in their natural haunts. Artificial fish hatching is an important factor in fish culture, but only when supported by a proper system of fish protection, otherwise it is a costly scien tific toy.

Were a person to hatch eggs in a carefully guarded incubator located in a well ventilated room and right after hatching, turn the little chicks into an empty lot, over which he has no control, and where the cats, dogs and also the children of the entire neighborhood run at liberty, with the expectation of seeing them grow to be fowls, fit for the table, he would not be considered a very wise man. This very same method has been carried on for years and years, with fish hatching. What we need is more fish protection.

We are pleased to report progress on the work of the New York Aquarium. The glass has all been reset this summer, the tanks having been made shallower, and the artistic decorations of the interior of the entire building is nearly finished. In our next issue we may be able to have illustrations showing sections of the Aquarium as it now appears.

* Some fifteen years ago, while living in Ohio, we advocated a bounty for fish enemies, but we were not supported.

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ORCHID COLLECTING IN NEW GRENADA.

"Jose, this night you have to sleep here in the house, as to-morrow we shall go out for a fortnight."

Jose, to whom this order was given, is my "boy," twenty-four years old, married, and a pure Indian. He is a great thief, and robs and cheats me whenever he can; indeed, people who know him well warned me not to let him see that I carry any large sum of money about with me. He was a soldier for six and a half years, knows every path in the environs, and is always willing to do as I order him—qualities which, after six weeks spent in my service, I have discovered that he alone possesses among the four "boys" I had employed. Jose, to whom I give six reals (two shillings six pence) per day, and boarding, asks me for an advance of five dollars, for his wife.

The mule is carefully fed and receives a double portion of bran with syrup, likewise corn and grass *ad libitum;* the saddle and harness are examined, and the bridle sent to the saddler for a small repair. All the necessary objects for traveling are set apart, to be fixed on the saddle, or put in the four saddle pockets, as waterproof hayeton (a heavy woolen cover enveloped in a goatskin), nuana, a bottle of brandy, cigars, matches, knife, thread, candle, cholera drops, opium, sticking plaster, lint, balsam, odontalgia, quinine in pills and powder, purgatives, emetics, alkali, liniment, lancet and pincers, my medicine chest, thermometer, and a drinking cup made of the shell of a cocoanut. In a wicker basket two and a half feet high and one and a half feet wide, which is to contain the plants gathered, and which the boy carries on his back, I put fifteen pounds of dry meat, at one shilling per pound, five pounds of bread, some cocoa, rice, peas, biscuits, extract of meat, two wooden spoons and a towel. I myself am provided with great waterproof boots, large spurs, a twelve-meter revolver in my belt, and a hatchet, and am dressed in warm clothes. We start at half-past four in the morning, in the brightest moonshine, after taking coffee, bread and eggs.

The journey commences step by step, and half an hour after, we go on slower still—we begin to mount. The road is intersected by two ridges, each two leagues up and one league down, and as, on the average, in the Cordillera one hour and a half is spent in traversing a league, we arrived in Mutiscua at half-past ten, just in time for breakfast, after having stopped twice on the road to wet our throats. A six-penny worth of grass is purchased for the mule, and one pound of meat and a little chocolate is handed to a woman who prepares it for us. At midday we continued our journey, and an hour afterward the wind began to blow more and more, becoming colder and colder, and we enter into the Paramos—mountainous districts.

Up to this point the way was in pure rock, four to six feet wide, uneven, rough and stony, with incessant

windings; sometimes rising steeply on both sides, sometimes rising on one side, with a frightful abyss on the other. Protruding blocks of rocks and disrooted trees above, often threaten the rider on these ways, which become still more disagreeable when one meets a train of mules loaded with boxes, bales, etc. Several times I got such knocks on the knee-cap, that I was almost ready to fall down from my mule. On such roads boxes are quite useless.

It is just on such routes as these that goods of all kinds have to suffer, and that my darling plants are injured so much, if not altogether spoiled. Collisions with mules bearing on their sides packages of one and a half quintals each, which sometimes, as in the case of tobacco boxes, empty bags, etc., are very voluminous, are on such roads inevitable, the more so, as from five to six beasts are driven by one man, and these caravans consist very often of from thirty to forty mules. As the pace of loaded mules is a quick one, the shock is a very rude one. There is no other road in this direction, and the communication between ——— and Bucaramauga is very animated.

The only way to diminish the danger is to travel as quickly as possible, and to avoid the approach to towns on market days. Another way of accounting for the frequent losses in damageable cargoes is to be found in the mode of fastening them to the sides of the mules; for, naturally, in order to resist the often-repeated shocks against other mules with baggage, which they meet on their way, or trees and rocks that obstruct the road, these packages must be fastened very closely, and the ropes make deep grooves in their sides.

We continue our journey. Now we get on a little quicker, because of the cold and the road being level, and further because the next cottage is some three leagues distant. There we arrive at four o'clock, just when mist and damp begin to cover everything. Donna Maria, the housemother, is a chuffy, unfriendly old woman; but as I always show her little attentions, which take the form of a present, sometimes of a shabby image of a saint, another time of a ribbon for her daughter, she offers me the best place near the big three stones (the fireplace) in the kitchen, which is safely closed, and where the smoke of the tremendous fire intended for cooking, warming and lighting all at once, makes the eyes weep The kitchen is at the same time saloon and dormitory for the most favored guests; and for that reason I receive, after the dinner (off my provisions), a cow skin and the privilege of choosing the best place in the kitchen. The amiability of the householder reaches its height when two sheep skins are opened for me—the saddle-pad supplies a pillow, and at eight o'clock we go to rest. Ten minutes afterwards my boy at my side snores so loudly that I am obliged to give him a poke in the ribs. For me there is no thinking of sleep, on account of the hundreds of fleas, and so I have sufficient time to make my plans for the next day, to think about orchids and a thousand other things, including the paying orders floating between London and ———.

Awaiting anxiously the approach of day, my boy receives a second poke. He awakes and asks me whether it is time to saddle the mule. Not yet; it is midnight. Then I am startled by the crowing of a cock, at some distance

over my head. Half the box of matches is spent before I find a candle in the saddle-pocket. It is five o'clock, and, therefore, time for rising. Jose, who had gone for the mule, comes back with a piece of the strap of leather in his hand, wherewith the mule was tied to a pole the evening before—hungry dogs had eaten the leather and liberated the mule, which, of course, looked for a more hospitable land than the Paramo, where, in a square mile, there is not a handful of grass to be met with. My boy runs back, and returns two hours afterwards, but without the mule, and there is nothing for it but to wait till somebody coming the same way may be able to give us some information. That happened, happily, some time after. The owner of a great train of mules, who was going from Bucaramauga to ——— with tobacco, and who

The Home of Orchids.

was now on his return, had seen my mule near Mutiscua, and he suggested that his people, who had remained behind, would probably have caught my mule and bring her along with them ; indeed, about mid-day I was so happy as to see my mule again. To the people who brought the beast I paid one dollar, and to every one a drink, by way of contribution. It was too late now to start that day, so I resolved, therefore, to proceed the next day, very early, and did so.

From here are three leagues, half of it still in the Paramo; the other half is a horrible slope, before reaching Tona, at every path increasing in richness of vegetation. At the end of the Paramo there is a cottage, from which a woman called to me by name, and asked me if I would be so kind as to dismount for a moment. Politeness is very seldom experienced in this region, but in this case there was a motive for it. When I passed, two and a half months ago, for the first time on this road, the night surprised me, and I was obliged to ask her for a night's lodging. There was a small boy of seven or eight years, whose eyes were full of suppuration ; I myself washed his eyes with warm camomile tea, and as I did not know what more to apply or prescribe, I wetted a piece of linen with the white of an egg, and covered his eyes with it. It is easy to fancy how terrified I was a week later, on my return, when passing there, to see the poor boy just as I had left him, with his eyes glued. I thought my practice would have occasioned bad consequences, but, happily, and to my greatest surprise, after removing the rag with warm water, his eyes were perfectly re-established. A stranger, in the opinion of the people, must always be something of a doctor, and they would take it to show a want of good will, should one deny to lend medical assistance when it is wanted. I am not very formal in the choice of remedies, and apply, in specially difficult cases, pills made of a little bread and epsom salts, the fingers being always sufficiently dirty to give them, by kneading and twisting, a professional appearance. Faith renders the doses efficacious, and I am not astonished when people thank me afterwards for my good services, as this poor woman did : she offered me a cup of soup.

Such people do not believe medicine to be efficacious if it is not dear, or has no disgusting taste. In general, the people on the Paramos are inhospitable, lazy, extremely dirty, superstitious, thievish, distrustful, cowardly, and, therefore, cunning. They have something of the character of gypsies ; with all that, the journeys in the glacial Sahara, as it may be called, are the most disagreeable ones imaginable.

From the end of the Paramos one descends rapidly and continuously till, after two hours, we arrive at a small, unfriendly town. There exists no inn, but a shopkeeper of my acquaintance offers to lodge me in his house. A letter of recommendation to the clergyman, Dr. P., which sometimes is of great use, is delivered, and after dinner I am so fortunate as to meet with the man in whose territorial possession, one league distant, I intend to pick up my plants. Mr. M. is very glad to see me again, and we arrange to meet the next day, he undertaking to procure two workmen, axes, and beasts, for the transport of the collected plants. The next day I meet Mr. M. at ten o'clock, the worse for drink, and when I speak to him about our agreement he begins

to insult me, saying he would not fulfill his engagement, and that all strangers come only to his country to exhaust it, and to deceive them, etc. To avoid a quarrel, and concluding that for this day there is nothing to expect, I return to the town. When intoxicated, people often show their true sentiments, and in such a condition we learn, alas ! that we strangers are only tolerated, and that their kindness is only simulated.

The next day Mr. M. comes to town and asks me to excuse his having offended me, and invites me to come on the following day, when he would prepare everything necessary, to fell the trees, etc. This day I could begin my work, collecting on two trees about the contents of half a box of plants, which I transport to the house. The next day heavy rain prevents me from doing anything ; only after seven days is the quantity of plants I want brought together, and I am fortunate the next day to find the necessary mules for their transport. The plants are packed with leaves of bananas and moss in nets, similar to fishing nets ; this is a day's work, and afterwards they are loaded on the mules, which bring them home in three days. Immediately after arrival they are discharged and spread out on the floor of my house, whilst I go with fresh linen to the bath house, to clean myself of the different insects wherewith clothes and body are covered. —*Gardener's Chronicle.*

MOIST AIR FOR HOUSE PLANTS.

Every florist and plant-grower will answer the oft-repeated question "How can I make my winter plants flourish?" by saying " You must keep the air moist." How to do this is, however, to many, a troublesome and unsolved problem. We have found by experience that the simplest solution to the problem is the use of a common whisk broom. Take a pail of tepid water every evening ; dip your broom in it and whisk it over the plants till everything is moist. Your plants will enjoy this bath and the insects will not. Insects dislike nothing so much as abundant dampness. The most troublesome enemy of all—the red spider—will soon leave for dryer quarters. " But," says some neat housekeeper, " I shall spoil my carpet if I keep up such a daily showering." So you will if you do not protect it, but with a good sized piece of oilcloth under your plant-stand, as there always should be, you may spatter away as much as you like.

There are a number of mechanical contrivances for showering plants, but all are more or less expensive. The brass garden syringes are always good. The ladies' size, with three sizes in sprinklers, is a very handy thing to have. But its price ($5.00) would keep a great many from purchasing. The cheapest thing, and one of the best for the purpose that we have seen, is the Elastic Plant Sprinkler. It is a rubber bottle, holding about a quart, and having a finely perforated cap of brass. Collapse and then throw this bottle into a pail of water and it will fill itself instantly. Then by squeezing it in the hand a fine spray is thrown on any part of the plant to which it is directed. This simple contrivance we can send by mail for $1.00 or a smaller size for 60 cents.

The dwarf-flowering cannas make very nice window plants. The Star of 1891 and 1892 are excellent for this purpose. Try it.

FRINGE TAIL GOLDFISH.

Good specimens of this species of Japanese Goldfish are rather rare.

The size of their fins and their friendly, innocent disposition, makes them an easy prey to their enemies.

Being highly appreciated by the nobility of their native country, the species is kept out of commerce, similar to fine breeds of dogs. These, too, are bred for the exclusive delight or use of one family or a select circle, and cannot be bought for their weight in gold. It is, therefore, only by chance that one may run across a fair specimen of the fringe tail ; as a rule they are very hard to get.

Tho' the morning be ever so bright,
And cloudless the sky of the noon;
Prepare your lamp ere approach of night!
For the day will end all too soon.
—*From the German.*

Now is the proper season to clean, rearrange and restock your aquarium for the winter. Do not overstock your aquarium. A few choice specimens are much more attractive and interesting, and require less attention and care than twice their number of ordinary everyday fish do.

Feed your fishes regularly every day, but don't overfeed them. Remember you don't want to fatten your fish for the table; all you want, is to keep them in good condition. When feeding IXL. food, bear in mind that this food is *condensed*, containing only select ingredients of a highly nourishing character. A granule of the size of a grain of wheat is sufficient for a daily ration of a small fish; when the fish is of medium size, two granules of IXL. are plenty a day.

When the water of your aquarium becomes cloudy or milky looking, this is a sign that you feed too much.

Every two or three weeks you should remove the refuse matter that has accumulated at the bottom of your aquarium by means of a glass dipping tube or a small rubber hose (siphon). The inside glass sides of an aquarium should be carefully wiped off at least once in a week.

Dutch Hyacinth bulbs should be planted during the month of October for house culture. Buy *single* named varieties; of these you will have the best results. Buy the best that you can get; these give you the most pleasure. The difference in price is only a few cents.

Do not forget to plant half a dozen or more of white Roman Hyacinths in a china dish (blue decorated china looks pretty with them), using a mixture of moss and sand for soil. They should be planted in the second half of September or first half of October, and will be in bloom at Christmas and New Year. Their culture is very simple. (See p. 12, vol. iv.)

During the winter months house plants are best watered in the morning. Water them only when they are dry; don't let them get *too* dry, but then water them well, not merely wetting the surface of the soil, with water of which the chill was taken off. In winter no water should be allowed to stand below the flower pots in the saucers.

Ficus repens is a very graceful trailing plant, especially well adapted to be grown on brackets. It should be kept rather moist.

Turtles should not be kept in an aquarium. They will injure the fish and also the plants.

At this season of the year turtles, that have been kept as pets, should be allowed to bury themselves for the winter. For that purpose fill an empty soap box half full of moist garden soil, dead leaves, small twigs and moss, all mixed up, and on top of this set the turtles. These will soon make themselves comfortable for the winter. The box is then covered by nailing slats over it, to keep cats and rats out, and put in the cellar until spring. The turtles will not eat during the winter.

The material in the box should be watered now and then to prevent its becoming too dry.

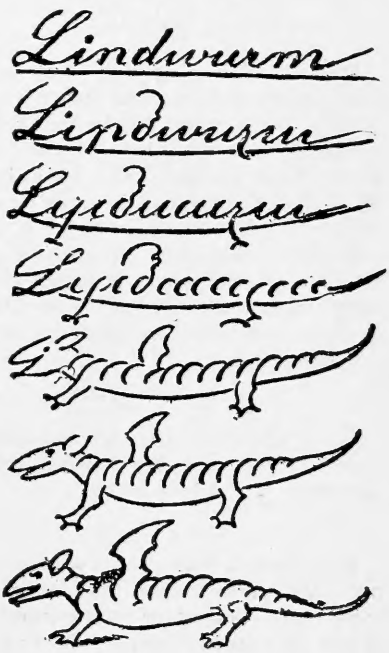
RUNAWAY SEALS.—It is reported that nine seals escaped from the Glen Island lake one night this summer. Among the missing ones is Minnie, the performing seal, that has entertained people all over the world with her wonderful tricks. She is regarded as one of the most valuable seals in existence, and the management of Glen Island has offered $500 for her return alive. There were twenty-nine seals in the lake at the time the party escaped. The theory is that Minnie succeeded in opening one of the sluice gates by which the lake is supplied with fresh water, and in this manner provided a means of escape for herself and the others.

A PLAGUE OF HYACINTHS.—The rapidly increasing water hyacinth will soon become a thing of serious menace to inland navigation on the smaller streams of this State unless some panacea is found for the evil. A year or two ago the presence of these plants in the two city navigation canals brought forth considerable comment, and at the time proved a source of serious annoyance and inconvenience to the vessels which use the basins. Now no one seems to know whence they came. The innumerable bayous of the southern part of the State are gradually filling up, and in many instances have become completely blocked with the hyacinth. Even the giant Atchafalaya is filled with great floating masses of the plants, and the streams south of the city, extending almost to Grand Lake, are dotted with islands formed of this beautiful plant, with its delicate spikes of purple flowers. It appears that many years ago, according to several of the Atchafalaya steamboat men, navigation was impeded in the tributaries of that river and on Bayou Teche, owing to the presence of the hyacinth, but after a few years the plant disappeared altogether.—*New Orleans Times-Democrat.*

IN RELATION TO THE DISCUSSION "Should college professors take out patents," which has been going on in the *Electrical Review*, the following anecdote of a prominent scientist is told:

"The man was the late Professor Agassiz. He was at one time, just in the height of his fame and reputation, approached by the manager of a lecture bureau, who made him an unusually liberal offer to deliver a series of lectures. As the offer did not appear to arouse any enthusiasm in the scientist, the manager expatiated at some length on the financial advantages of the scheme, and finally increased the offer. Looking at him steadily Professor Agassiz said: 'My friend, I haven't time to make money.'"

EVOLUTIONS OF THE LINDWURM.



It is claimed that 60,000 pounds of frogs' legs were sold in the New York markets this year, the retail price ranging from 35 cents to 65 cents a pound.

For the small sum of one dollar in advance, which pays for a year's subscription to THE AQUARIUM, you are entitled to ask information on any point regarding the aquarium or the window garden. We offer no other premium to our subscribers than that of putting over 25 years of practical experience in these branches at their disposal. Ask as many questions as you please, but please to enclose postage for reply. All questions are answered by mail, and we publish only such in these columns as are of general interest.

Dr. B.——B.—The disease is caused by a microscopic parasite called *Ichthyophtlurius*, which means *fish destroyer*. It is a parasite similar to the one that causes the disease known as itch. Its presence is first indicated by small white spots that appear here and there on the body of the fish and also upon the fins. The parasite spreads rapidly, working its way below the fish's skin, destroying this completely, the fins soon appearing like bristle brushes. Soon after this stage, a white fungus growth makes its appearance upon the decaying parts, which is the beginning of the end.

If a daily bath in strong salt-water, to last a few minutes each time, is given the affected fish when the disease is in its first stage, the parasites will be destroyed.

In a communication to THE AQUARIUM (see p. 14, Vol. IV.) a lady states that she has completely cured her goldfish, which were badly affected with the disease in question, by putting them on a diet of young snails, keeping the fish in a properly stocked tank by themselves. Many people in certain districts of Europe eat snails, claiming that they purify their system. Snails may possess some medicinal properties. We wish that some of our readers, should they have the misfortune of having their fish affected with this disease, would try the snail diet on them and report the results to the Editor of THE AQUARIUM for the benefit of other goldfish fanciers. Our own fish are not troubled by this disease; it may be due to our IXL fish food, which is medicinal to some extent and keeps them in prime condition and therefore less liable to any kind of disease, and much more able to resist the contraction of disease than if they were in poor condition.

Mrs. F. E. J.—When you speak of "Japs," we presume that you mean the *double-tailed* Japanese goldfish. These, being a great deal slower in their movements, are easier injured by their enemies than the single tailed species.

Most species of sunfish are terribly savage; they will pick out the eyes of other fish. We have proof that a sunfish picked out and ate both eyes of a medium sized telescope fish. The telescope fish was afterward placed where it could be fed separately and lived for years after that accident.

Regarding the fin trouble, this may be caused by the sunfish also, or you may have young eels in your pond; both will injure fish by biting off their fins.

Mrs. H. V.—To make a success of anything nowadays requires that one becomes a specialist. You must find out what species and what varieties of fish do best in your locality under the conditions you have at hand. These you must cultivate with the utmost care, bringing the characteristics of the variety, whatever these may be, to perfection. You should find out whether *color* or *shape* is most in demand with the people among whom you expect to find customers; whether small, short, slender, plump, round or flat shapes are preferred. According to these demands, you must breed your fish, always keeping your eye on the production of a novelty in the shape of an interesting cross-breed.

In order to do this successfully, it is necessary to keep a stock book wherein the pedigrees of your fish are carefully recorded. Aim for quality not quantity, and you are sure to succeed. We have never had too many choice fish yet.

Subscriptions to THE AQUARIUM are now due. Those who know themselves to be in arrears are politely requested to remit.